

ONTARIO MINISTRY OF ENVIRONMENT



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OPERATING SUMMARY

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CITY OF

CHATHAM

WATER POLLUTION CONTROL PLANT

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1974**

Chatham : water pollution
control plant.

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Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, SOUTHWESTERN REGION
D. McTavish

MANAGER, UTILITY OPERATIONS
A. Ladbrooke

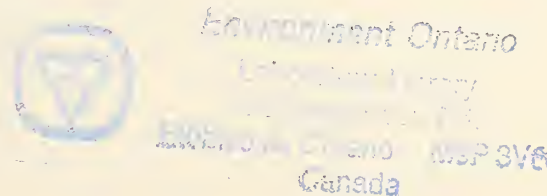
CHATHAM WATER POLLUTION CONTROL PLANT

operated for
THE CITY OF CHATHAM
by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director





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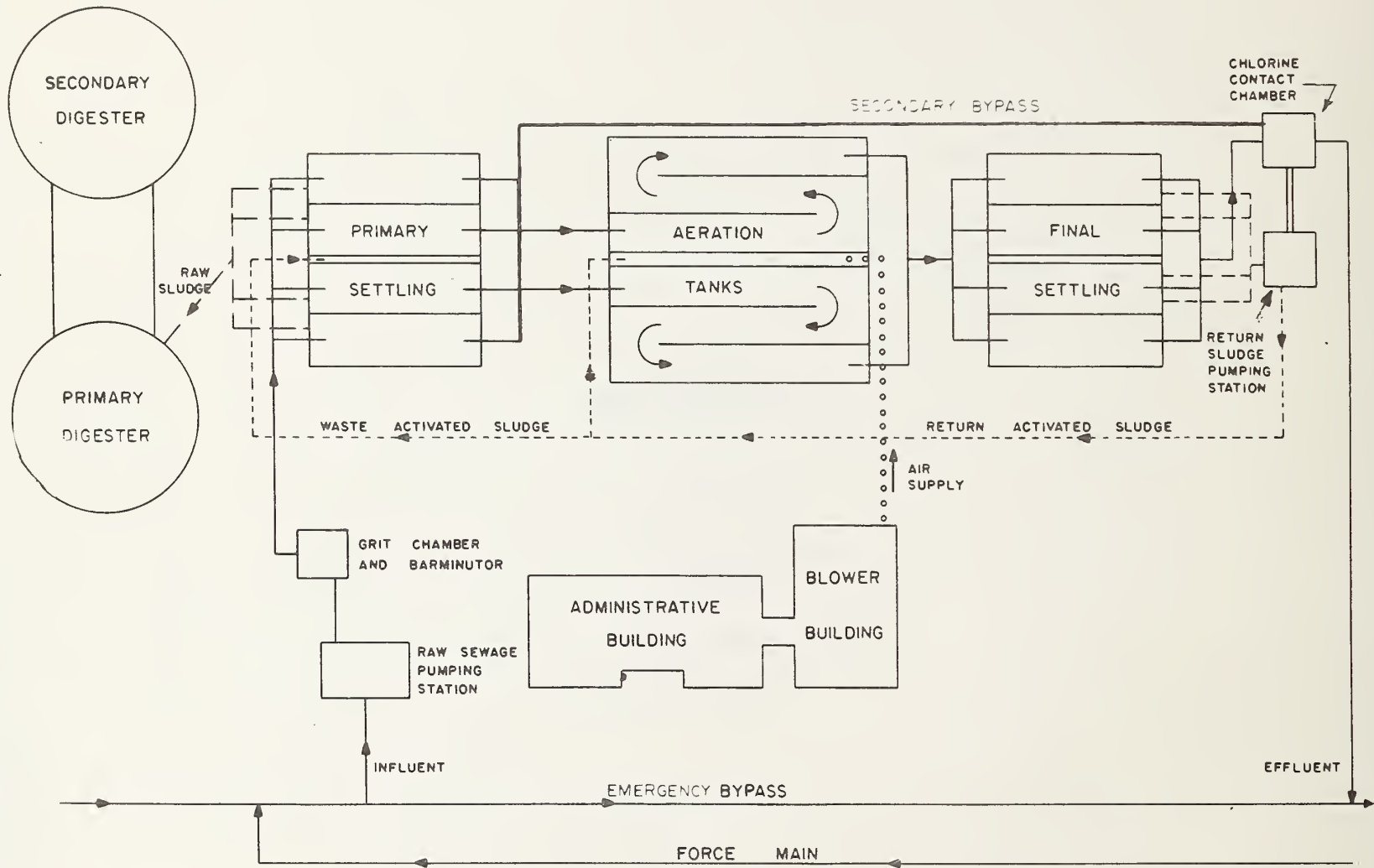
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CITY OF CHATHAM WPCP



DESIGN DATA

PROJECT City of Chatham WPCP

PROJECT NO. 2-0102-62

TREATMENT Activated Sludge

DESIGN FLOW 4.5 mgd

DESIGN POPULATION 45,000

BOD - Raw Sewage 250 mg/l
- Removal 90%

SS - Raw Sewage 250 mg/l
- Removal 90%

RAW SEWAGE

Screening

- One manually-cleaned bar screen

Pumps

Type: Worthington
Size: Three 3750 gpm @ 47' tdh
One 3750 gpm @ 47' tdh
(electric & standby diesel)

PRIMARY TREATMENT

Grit Removal

Type: Aerated, with clamshell bucket
Size: One 27' x 14' x 11 2/3 (avg)
(27,450 gal)
Retention: 8.8 min
Air Supply: One Sutorbilt

Comminution

Type: Barminutor
Size: Two model C

Primary Sedimentation

Type: Jeffrey, two-pass
Size: Two 80' x 32' x 12' (avg)
(382,000 gal)
Retention: 2.05 hr
Loading: Surface, 878 gal/ft²/day
Weir, 9400 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Diffused air; triple pass
Size: Two 130' x 63' x 14'
(1.43 mil gal)
Retention: 7.6 hr

Diffusers

Type: Schumacher tubes
125 per pass on 12" centres

Air Supply

Type: Sutorbilt
Size: Three 2500 cfm

Secondary Sedimentation

Type: Jeffrey
Size: Two 120' x 32' x 12' (avg)
(574,000 gal)
Retention: 3.08 hours
Loading: Surface, 586 gal/ft²/day
Weir, 8780 gal/ft/day

CHLORINATION

Type: F & P
Size: One 2000 lb/day
One 400 lb/day

Chlorine Contact Chamber

Size: One 33.6' x 30' x 10' (62,300 gal)
Retention: 22 min

OUTFALL

- 1,025' to Thames River

SLUDGE HANDLING

Digestion System - Two-stage
Primary--

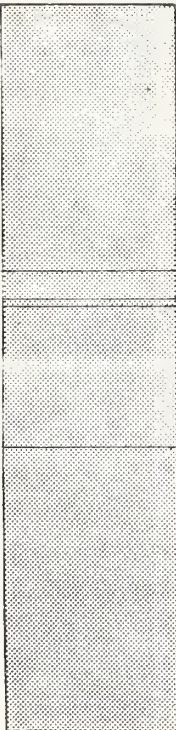
Type: Gas mixed, fixed cover
Size: One 65' dia x 25' (83,000 cu ft
or 0.52 mil gal)

Secondary--

Type: Fixed cover
Size: One 65' dia x 25' (82,000 cu ft
or 0.51 mil gal)

ANNUAL COSTS

1974 OPERATING COSTS



● SALARIES & WAGES	35 %
● EMPLOYEE BENEFITS	4 %
● TRANSPORTATION & COMMUNICATIONS	1 %
● SERVICES	20 %
● SUPPLIES & EQUIPMENT	40 %
● AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	0 %
● TRANSFER PAYMENTS	0 %
● OTHER TRANSACTIONS	1 %

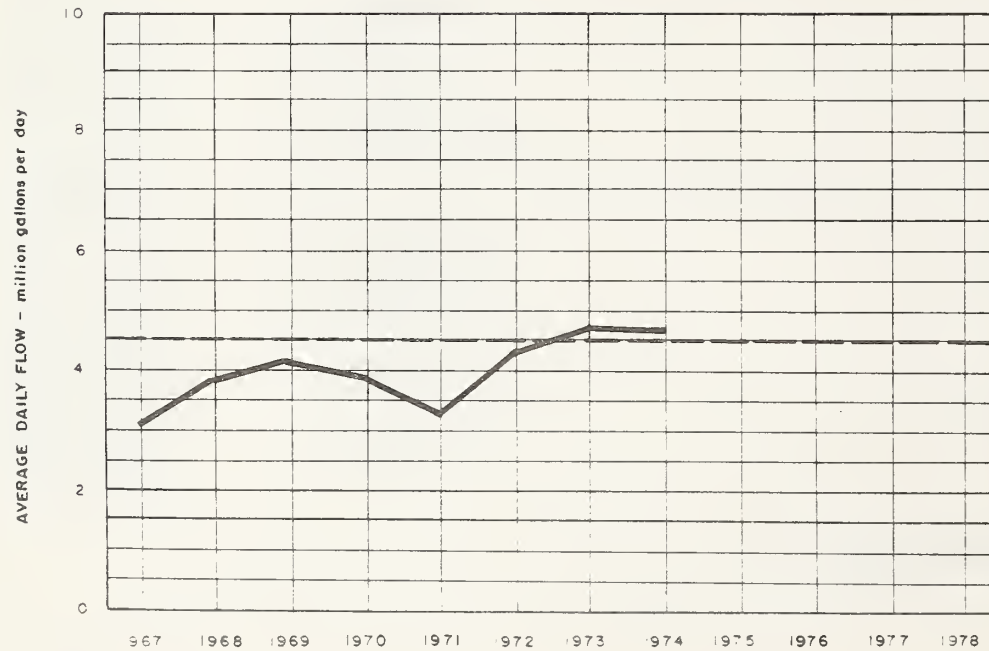
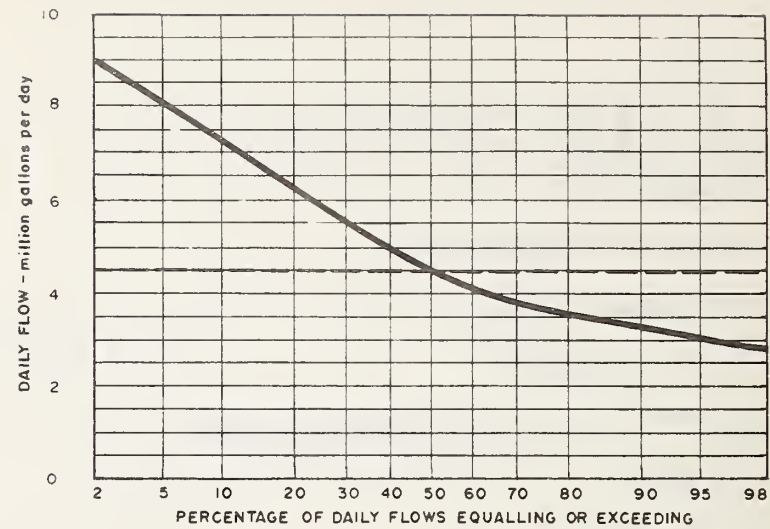
YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			\$/M.G	¢/lb BOD
1970	1355	153,786	117	5
1971	1214	193,158	159	8
1972	1558	205,305	132	8
1973	1727	264,380	153	9
1974	1741	366,748	211	11

OPERATING EXPENDITURES

Regular Staff	\$ 125358	\$
Casual (Unclassified) Staff	2771	
TOTAL SALARIES AND WAGES		128129
TOTAL EMPLOYEE BENEFITS		13777
TOTAL TRANSPORTATION AND COMMUNICATIONS		5350
Insurance	4726	
Sludge Haulage	59946	
Repairs and Maintenance	6150	
Other Services	1730	
TOTAL SERVICES		72552
Machinery and Equipment	40182	
Chemicals	30238	
Utilities	62842	
Other Supplies and Equipment	13049	
TOTAL SUPPLIES AND EQUIPMENT		146311
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		629
GRAND TOTAL	GRAND TOTAL	\$ 366748

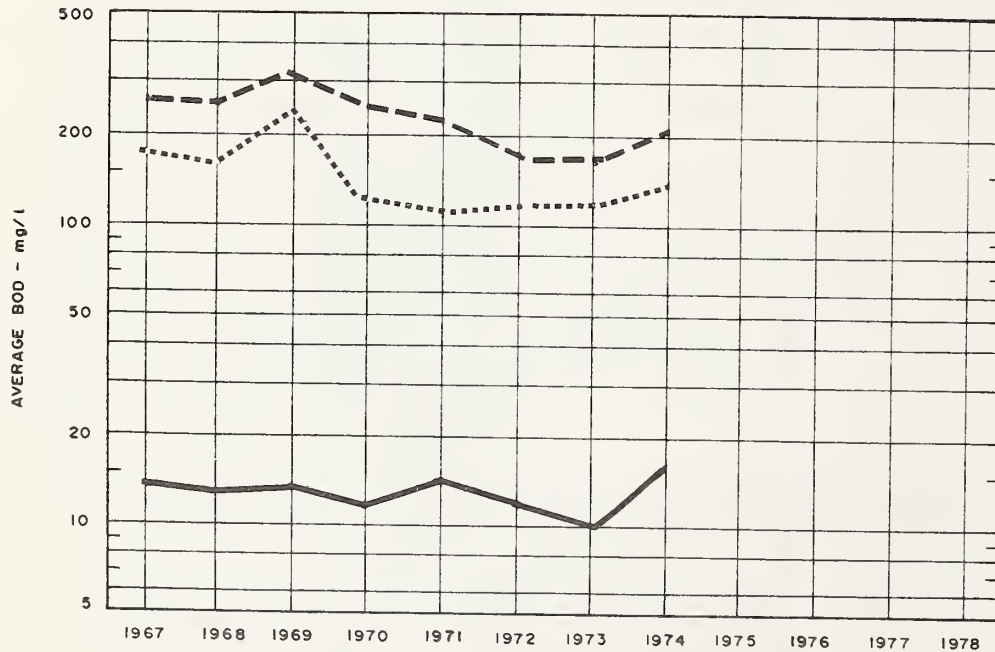
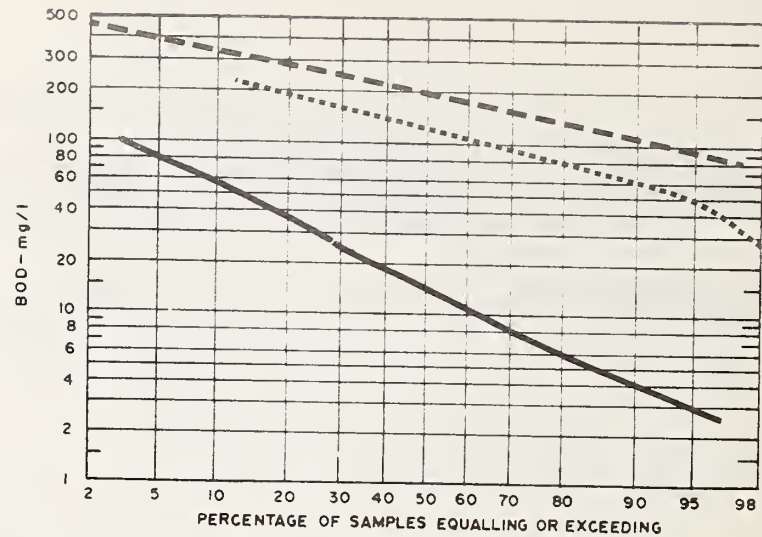
PROCESS DATA FLOWS



PLANT PERFORMANCE

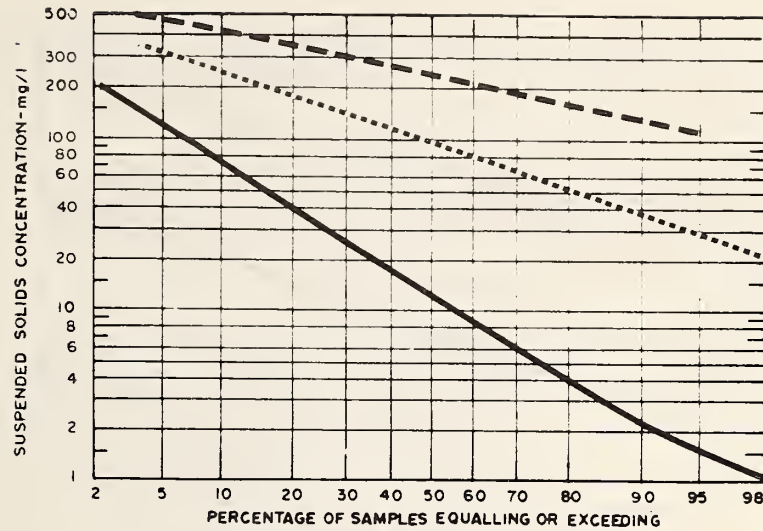
MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10 ³ pounds	mg/l	mg/l	%	10 ³ pounds	mg/l P	mg/l P
JAN	166.4	5.4	12.1	191	20	90	284	226	37	84	314	22.0	2.7
FEB	137.9	4.9	10.7	292	17	94	379	198	56	72	196	10.0	1.9
MAR	202.4	6.5	14.2	169	8	95	326	229	15	94	433	11.9	1.4
APR	157.2	5.2	8.6	205	10	95	306	268	7	97	410	12.5	2.0
MAY	162.5	5.2	8.8	201	10	95	310	263	14	95	405	8.6	2.1
JUNE	118.7	3.9	5.0	212	11	95	238	296	10	97	339	15.6	1.9
JULY	125.1	4.0	5.5	242	18	93	280	324	9	97	394	17.0	1.8
AUG	131.6	4.2	7.2	159	8	95	199	284	6	98	366	11.3	.8
SEPT	199.5	6.6	8.1	186	38	80	295	226	82	64	287	10.4	5.3
OCT	102.7	3.3	5.5	236	17	93	225	311	39	87	279	14.5	1.9
NOV	115.6	3.9	5.9	254	8	97	284	298	8	97	335	11.5	1.1
DEC	121.5	3.9	7.1	172	5	97	203	242	4	98	289	11.6	1.1
TOTAL	1741.1	-	-	-	-	-	3378	-	-	-	4074	-	-
AVG.		4.7	MAXIMUM 14.2	211	17	92	281	261	27	90	340	12.8	2.1
No. of Samples	-	-	-	113	112	-	-	279	281	-	-	151	151




BIOCHEMICAL OXYGEN DEMAND

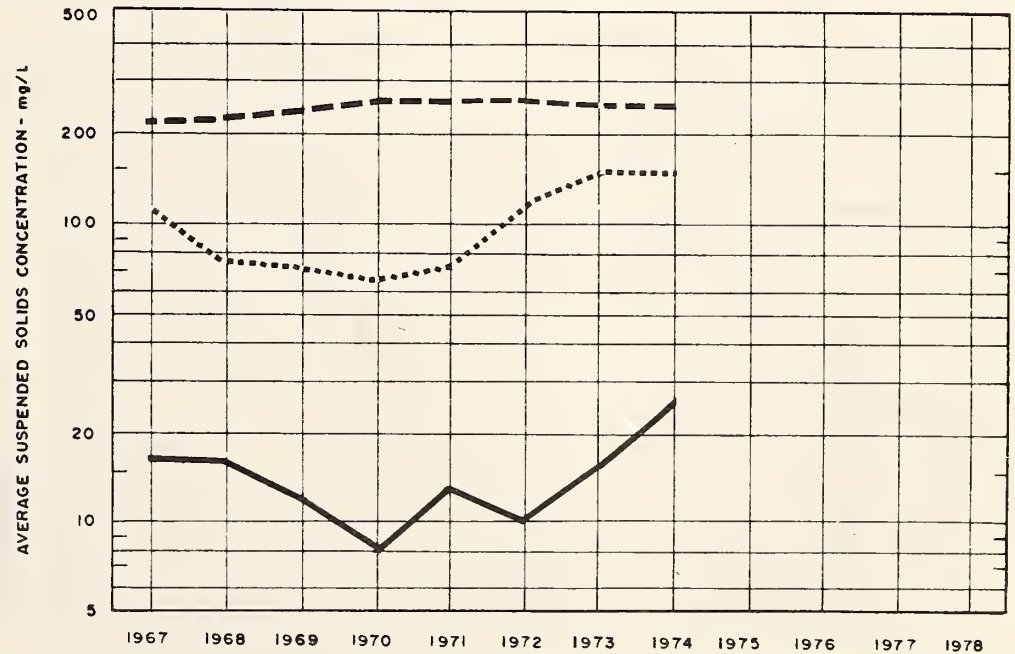


PLANT INFLUENT ---
PRIMARY EFFLUENT
PLANT EFFLUENT —

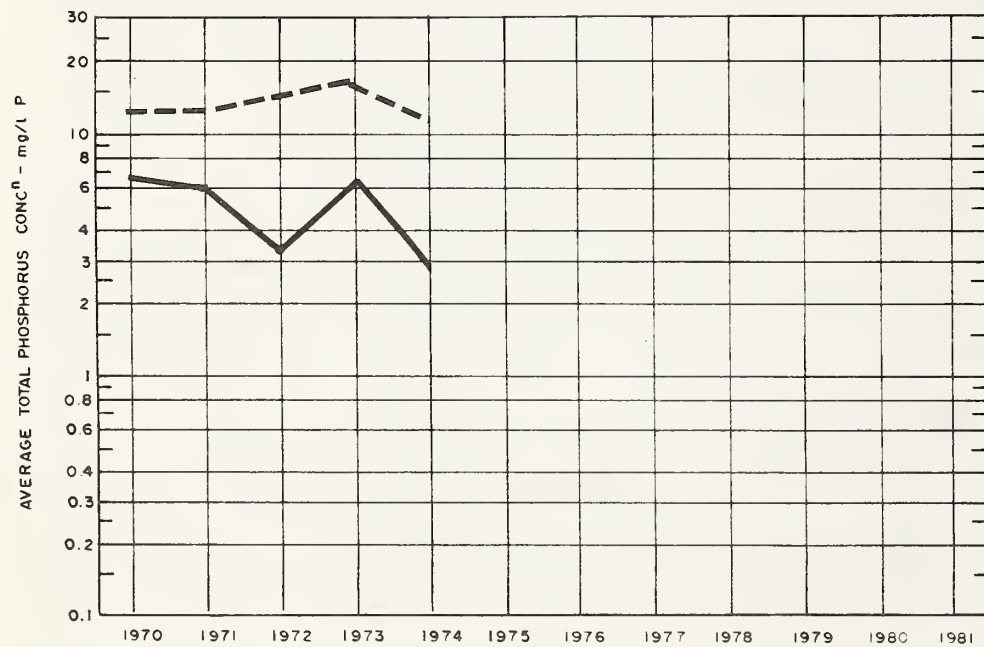
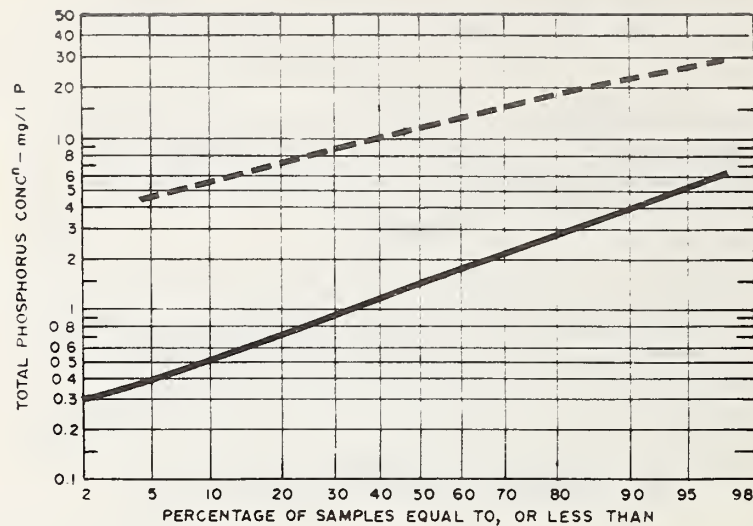
SUSPENDED SOLIDS



PLANT INFLUENT 
 PRIMARY EFFLUENT 
 PLANT EFFLUENT 



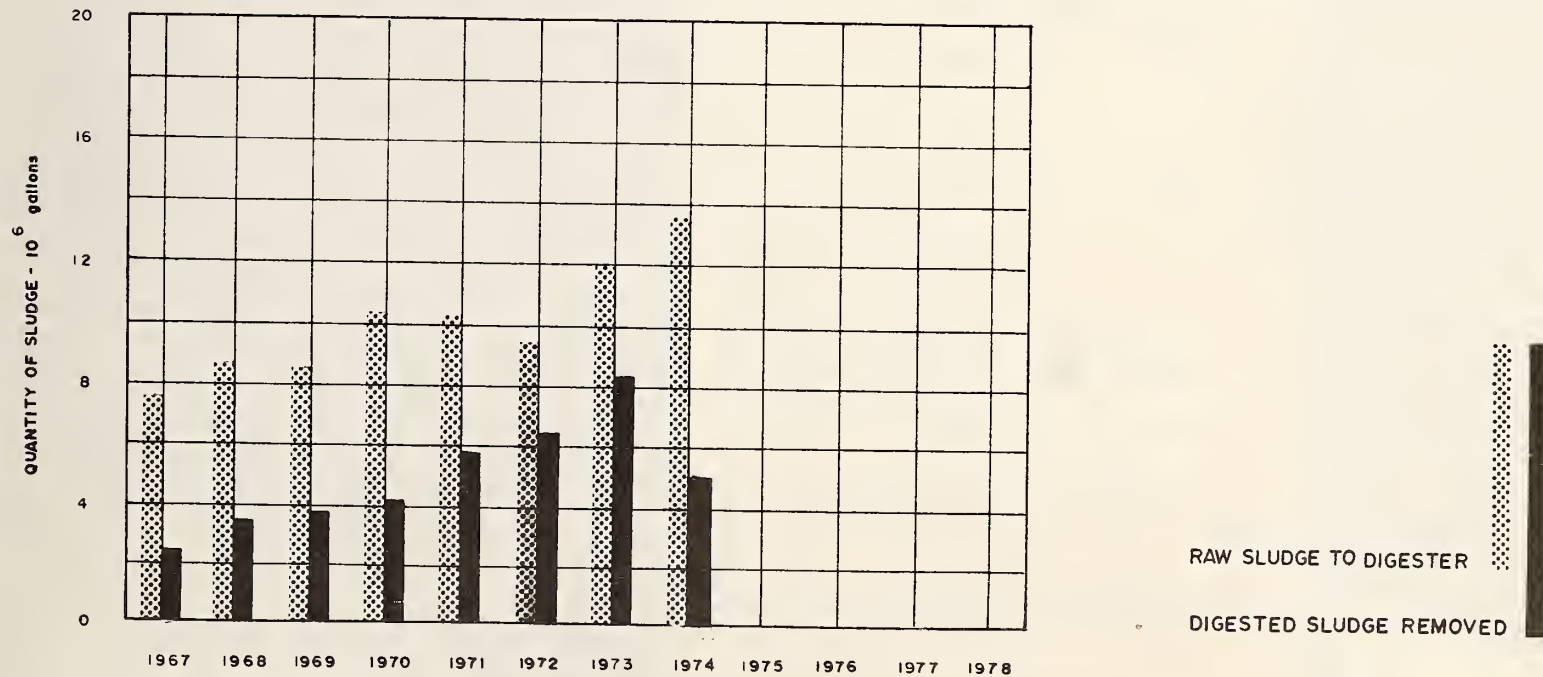
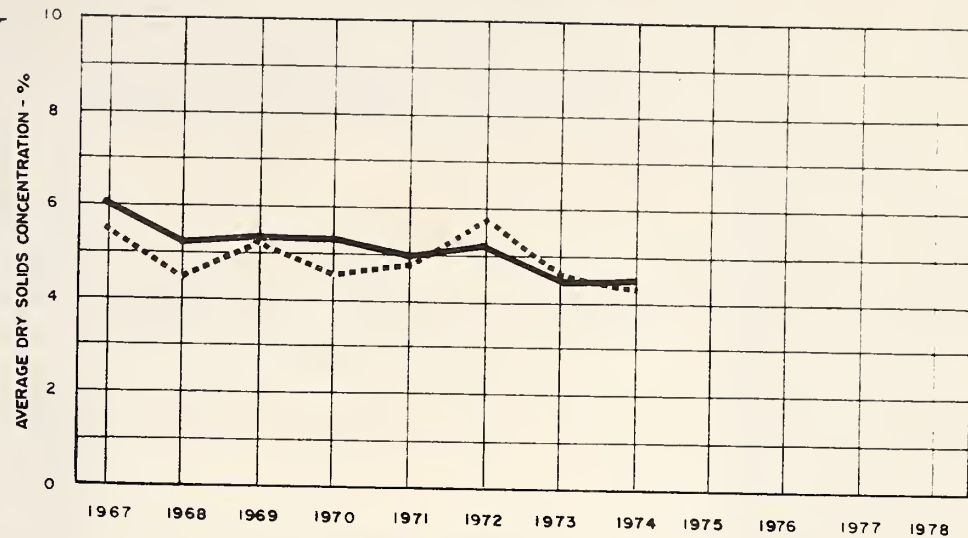
PHOSPHORUS



PLANT INFLUENT - - - - -
 PLANT EFFLUENT —————

DIGESTION

RAW SLUDGE
DIGESTED SLUDGE ———



RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED ———

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CL ₂ USED 10 ³ pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day ⁻¹	AIR 1000 ft ³ lb BOD	RAW SLUDGE			DIGESTED SLUDGE			SUPER- NATANT T. S. %	AMOUNT HAULED cubic yards
									QUANTITY 10 ³ gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10 ³ gallons	TOTAL SOLIDS %	VOL. SOLIDS %		
JAN	190	0		133	137	2700	.18	1.1	1211	3.5	47	779	3.8	41	.7	4629
FEB	128	0		167	120	4380	.13	1.0	1483	3.2	47	771	3.6	35	1.4	4577
MAR	199	0		138	168	3550	.18	.7	1035	5.1	51	720	4.5	35	2.9	4278
APR	215	0		126	132	3620	.12	1.0	1737	3.8	51	648	4.4	37	1.0	3851
MAY	189	5.1	6.1	124	137	3380	.13	1.5	2851	4.1	47	490	4.1	40	.7	2906
JUNE	96	9.2	7.8	144	112	3360	.12	1.7	651	3.7	50	394	4.2	39	.8	2340
JULY	183	5.2	4.1	99	70	3000	.09	2.1	0	5.0	49	42	4.7	37	1.9	250
AUG	226	3.9	2.9	92	88	2990	.09	2.0	5	6.6	47	206	6.3	41	1.9	1225
SEPT	348	6.5	3.4	156	171	2240	.03	1.2	1279	4.0	47	720	4.9	41	1.2	4272
OCT	136	4.0	6.4	159	106	2650	.14	1.9	691	3.7	63	13	4.4	42	.2	74
NOV	134	0	-	159	106	3220	.13	1.2	1528	4.1	57	0	4.4	43	1.6	0
DEC	105	0	-	102	94	3120	.09	1.6	924	4.0	54	0	3.9	45	2.3	0
TOTAL	2149	33.9	-	-	-	-	-	-	13395	-	-	4783	-	-	-	28402
AVG.	1.2 cu. ft/mil gal		4.7	140	144	3200	.11	1.4		4.2	50		4.6	39	1.4	

Date Due

ONTARIO WATER RESOURCES COMMISSION
DIVISION OF PLANT OPERATIONS.

TD 227/C43/W38/1974/MOE
CHATHAM - WATER POLLUTION CONTROL
PLANT. ANNUAL OPERATING SUMMARY.

1974

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Chatham water

pollution control

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Chatham : water pollution
control plant.
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